

CLAIMS

1. A method for serving requests for Internet information files in an Internet caching system, comprising the steps of:

receiving, at a local Internet cache server, a user request from a user for an Internet information file;

in response to the received request, making a query for said information file, if said information file has not been cached by said local server;

in response to a reply to said query, making a file request for said information file, wherein said file request is directed to a feeder means if said reply indicates that a central file server, storing cached Internet information files, has said information file cached; and

querying, from said feeder means in response to said file request, said central file server for said information file,

in order to decrease the load on said central file server.

2. The method as claimed in claim 1, wherein said query is performed by said local cache server in accordance with a protocol used for communicating between Internet cache servers.

3. The method as claimed in claim 2, wherein said protocol is the Internet Cache Protocol (ICP).

4. The method as claimed in claim 2, wherein said protocol is the Cache Digest.

5. The method as claimed in any one of claims 1 - 3, wherein said query is directed by said local cache server to said feeder means, which feeder means as a response returns said reply.

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6. The method as claimed in 5, comprising the step  
of deriving, at said feeder means, a query number corre-  
sponding to said information file being concerned in said  
5 query.

7. The method as claimed in 6, wherein said querying  
step comprises using the derived query number when  
querying said central file server for said information  
10 file.

8. The method as claimed in claim 6, wherein said  
query provides an alphanumerical string associated with  
said information file, said string being used in said  
15 step of deriving said query number.

9. The method as claimed in claim 8, wherein said  
alphanumerical string is a Uniform Resource Locator (URL)  
and said query number is derived from said URL and at  
20 least part of a header information field of said query.

*Sub A2*  
10. The method as claimed in any one of claims 1, 2  
or 4, wherein said file request provides an alpha-  
numerical string associated with said information file,  
said string being used by said feeder means for deriving  
25 a query number corresponding to said information file.

11. The method as claimed in claim 10, wherein said  
alphanumerical string is a Uniform Resource Locator (URL)  
30 and said query number is derived from said URL and at  
least part of a header information field of said file  
request.

*Sub A3*  
12. The method as claimed in any one of the pre-  
35 ceding claims, comprising the step of creating an indexed  
table having an entry for each Internet information file  
being cached at said central file server.

13. The method as claimed in claim 12, comprising  
the steps of:

5 performing a search in said indexed table for said  
information file; and

indicating in said reply to said query whether or  
not said information file was found during said search.

*Su/s A4*

10 14. The method as claimed in any one of the pre-  
ceding claims, wherein said querying step comprises using  
the Structured Query Language (SQL) when querying said  
central file server for said information file.

15 15. The method as claimed in any one of the pre-  
ceding claims, wherein said querying step comprises the  
steps of:

20 selecting, based upon an original host name or IP-  
address of said information file, a central file server  
out of a set of central file servers, each server of said  
set being arranged to cache Internet information files  
with original host names or IP-addresses within a pre-  
defined range; and

25 querying the selected central file server for said  
information file.

25 16. The method as claimed in any one of claims 6 -  
14, wherein said querying step comprises the steps of:

30 selecting, based upon said query number derived for  
said information file, a central file server out of a set  
of central file servers, each server of said set being  
arranged to cache Internet information files with corre-  
sponding query numbers within a predefined range; and

querying the selected central file server for said  
information file.

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17. The method as claimed in any one of claims 1 -  
16, comprising the further steps of:

retrieving, at said local cache server, said information file from its origin server if said reply to said query indicates that said information file is not cached at said central file server;

5 caching said information file at said local cache server; and

updating said central file server by requesting a copy of said information file from said local cache server and caching said copy in said central file server.

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18. An arrangement in an Internet caching system, said system comprising at least one local cache server and at least one central file server, both of which servers stores cached Internet information files, which arrangement, for decreasing the load on said central file server, includes a Feeder communicating with said local cache server and with said central file server, wherein said Feeder includes:

first means for receiving a request for an Internet information file from said local cache server;

20 second means for deriving a query from an alpha-numerical string received from said local cache server; and

third means for querying said central file server 25 for said Internet information file using said query derived by said second means.

19. The arrangement as claimed in claim 18, wherein said first means is arranged to operate in accordance 30 with a layer three Internet protocol.

*Swt AS* 7  
35 20. The arrangement as claimed in claim 18 or 19, wherein said third means is arranged to use the Structured Query Language (SQL) when querying for said Internet information file.

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21. The arrangement as claimed in any one of claims  
18 - 20, wherein said alphanumerical string is included  
in said request received from said local cache server.

5 22. The arrangement as claimed in claim 21, wherein  
said query is derived from said alphanumerical string and  
at least part of a header information field of said  
request received from said local cache server.

10 23. The arrangement as claimed in claim 22, wherein  
said query comprises a query number, the query number  
being derived by applying a hash algorithm to said string  
and to said part of said header information field.

*Sub A6*

24. The arrangement as claimed in any one of claims  
18 - 20, wherein said Feeder includes:  
fourth means for receiving a query for an Internet  
information file from said local cache server; and  
fifth means for providing said local cache server  
20 with a reply to the received query.

25. The arrangement as claimed in claim 24, wherein  
said fourth means and said fifth means are arranged to  
operate in accordance with a protocol used for communi-  
cating between Internet cache servers.

26. The arrangement as claimed in claim 25, wherein  
said protocol is the Internet Cache Protocol(ICP).

*Sub A7*

27. The arrangement as claimed in any one of claims  
24 - 26, wherein said alphanumerical string is included  
in said query received from said local cache server.

35 28. The arrangement as claimed in claim 27, wherein  
said query derived by said second means is derived from  
said alphanumerical string and at least part of a header

information field of said query received from said local cache server.

29. The arrangement as claimed in claim 28, wherein  
5 said query comprises a query number, the query number  
being derived by applying a hash algorithm to said string  
and to said part of said header information field.

*Sub A8* 7 30. The arrangement as claimed in one of claims 24 -  
10 29, wherein said Feeder includes a table with a copy of  
the full index of all Internet information files cached  
at said central file server.

31. The arrangement as claimed in claim 30, wherein  
15 said reply to said received query by said fifth means is  
based on the content of said table.

*Sub A9* 7 32. The arrangement as claimed in one of claims 18 -  
20 31, wherein said arrangement, for further decreasing the  
load on said central file server, includes an Updater  
communicating with said local cache server and with said  
central file server, wherein said Updater includes:  
requesting means for requesting a copy of an  
Internet information file stored in a local cache server;  
and  
storing means for storing the thereby received copy  
in a central file server.

33. The arrangement as claimed in claim 32, wherein  
30 said requesting means are arranged to request a copy of  
an information file from its origin server, if a local  
cache server storing said information file resides behind  
a firewall.

*Sub A10* 7 34. The arrangement as claimed in claim 32 or 33,  
35 wherein said Updater is arranged to communicate with said

*Sub A16*

Feeder for receiving an order to request said copy of  
said information file.

35. The arrangement as claimed in any one of claims  
5 32 - 34, wherein said Updater includes a list of known  
uncachable information files, for which files a copy  
should not be requested.

36. The arrangement as claimed in any one of claims  
10 16 - 35, wherein said Feeder is implemented by a lower  
end computer and said central file server is implemented  
by a higher end computer.

37. The arrangement as claimed in any one of claims  
15 32 - 35, wherein said Updater is implemented by a lower  
end computer and said central file server is implemented  
by a higher end computer.

38. The arrangement as claimed in claim 37, wherein  
20 said Updater and at least one Feeder are implemented by a  
single lower end computer.

39. An Internet caching system, comprising:  
a set of local Internet cache servers, wherein each  
25 local cache server is arranged to receive requests from  
users for Internet information files;  
at least one central file server included in a  
central cache site and storing cached Internet informa-  
tion files; and  
30 feeder means interconnecting said set of local cache  
servers with said central file server, said feeder means  
including at least one Feeder, which Feeder comprises  
means for communicating with at least one local cache  
server in accordance with a protocol used for communi-  
35 cating between Internet cache servers and means for  
retrieving Internet information files from said central

file server using data base queries, thereby decreasing the load on said central file server.

40. The system as claimed in claim 39, wherein said  
5 feeder means are included in said central cache site.

*Sub A11* ] 41. The system as claimed in claims 39 or 40, wherein each of said feeder means includes a plurality of Feeders, each of said Feeder interconnecting a subset of  
10 said set of local cache servers with said central file server.

42. The Internet caching system as claimed in any one of claims 39 - 41, wherein said central cache site is arranged to serve a defined set of local cache servers, which set in turn serves a linguistically and culturally homogenous user community.  
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43. The Internet caching system as claimed in any one of claims 39 - 42, wherein said protocol used is either the Internet Cache Protocol or the Cache Digest.  
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44. The Internet caching system as claimed in any one of claims 39 - 43, wherein each of said Feeder  
25 includes a table with a copy of the full index of all information files cached at said central cache site.

45. The Internet caching system as claimed in any one of claims 39 - 44, wherein said central file server  
30 includes cached Internet information files having original host names within a predefined range.  
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46. The Internet caching system as claimed in any one of claims 39 - 45, further comprising updater means, interconnecting said central file server with at least one local cache server of said set, for retrieving a copy of an Internet information file from its origin server or

*Sub A11* / from said at least one local cache server and for storing  
said copy in said central file server.